



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/758,485	01/15/2004	Abdo Esmail Abdo	ROC920030341US1	6173
30206 7590 01/24/2007 IBM CORPORATION ROCHESTER IP LAW DEPT. 917 3605 HIGHWAY 52 NORTH ROCHESTER, MN 55901-7829			EXAMINER COLAN, GIOVANNA B	
			ART UNIT 2162	PAPER NUMBER
SHORTENED STATUTORY PERIOD OF RESPONSE		MAIL DATE	DELIVERY MODE	
3 MONTHS		01/24/2007	PAPER	

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No. 10/758,485	Applicant(s) ABDO ET AL.	
	Examiner Giovanna Colan	Art Unit 2162	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 October 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-19 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This action is issued in response to the Amendment filed on 10/13/2006.
2. Claims 1, 9, and 17 were amended. No claims were canceled. No claims were added.
3. This action is made Final.
4. Claims 1 –19 are pending in this application.
5. Applicant's arguments filed on 10/13/2006 have been fully considered but they are not persuasive.

Claim Rejections - 35 USC § 112

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
7. Claims 1 – 19 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 1, 9, and 17 recite the limitation "the prior application". There is insufficient antecedent basis for this limitation in the claim. It is unclear to the examiner which prior application the claims refer to.

Any claim not specifically addressed, above, is being rejected as incorporating the deficiencies of a claim upon which it depends.

Appropriate correction required.

Claim Rejections - 35 USC § 102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

9. Claims 1- 19 are rejected under 35 U.S.C. 102(e) as being anticipated by Agrawal et al. (Agrawal hereinafter) (US Patent No. 6,513,029 B1, filed: August 1, 2000).

Regarding Claims 1, and 9, Agrawal discloses an apparatus for performing a query in a relational database system by operating upon a plurality of relations each comprising a plurality of tuples formed over a plurality of attributes, comprising:

a data storage device storing said relations (Col. 7, lines 3 – 10, a database, Agrawal), and

a processor evaluating join predicates in said query to determine whether a join involving a first relation and a second relation will be reductive of said first relation (Fig. 6, item 601, 602, and 603, Col. 15, lines 26 – 30 and 43 – 46; respectively, Agrawal¹),

¹ Wherein V1 and V2 correspond to the first relation and second relation claimed; and wherein the step of eliminating corresponds to the step of reducing as claimed.

Art Unit: 2162

identifying a join involving said first and second relations that will be reductive of said first relation (Col. 15, lines 29 – 31, V12, Agrawal), and performing said query by the prior application of a look-ahead predicate based upon the second relation in the join (Fig. 6, item 603, and 601, Col. 15, lines 51 – 55 and 58 – 59, Agrawal²).

Regarding Claims 2, and 10, Agrawal discloses an apparatus wherein said processor determines whether a relation involved in the join is subject to a selection criterion (Fig. 9, items 902, and 903, Col. 16, lines 56 – 62, Agrawal³), and evaluates whether that selection criterion effects a join reduction (Fig. 9, item 904, and 905, Col. 17, lines 11 – 16, Agrawal).

Regarding Claims 3, and 11, Agrawal discloses an apparatus wherein an amount of join reduction effected by a selection criterion is determined by identifying whether the number of rows in the join result will be smaller than the number of rows in the first relation (Fig. 9, item 904, Col. 17, lines 5 – 10, Agrawal).

Regarding Claims 4, and 12, Agrawal discloses an apparatus wherein, upon identifying a join reduction involving a first and a second relation (Fig. 9, item 904, Col. 17, lines 7 – 10, Agrawal⁴), and a selection criterion on the second relation, the potential

² Wherein the step of estimating the number of rows through the optimizer corresponds to the step of using a look-ahead predicate as claimed.

³ Wherein the selection conditions correspond to the selection criteria claimed.

⁴ Wherein the “if” statement that includes the step of obtaining the Min size corresponds to the step of identifying a join reduction as claimed.

Art Unit: 2162

benefit of that join reduction is assessed (Fig. 9, item 905, Col. 17, lines 9 – 10 and 22 – 26, Agrawal⁵).

Regarding Claims 5, and 13, Agrawal discloses an apparatus wherein said processor evaluates the computational expense of generating a look-ahead predicate comprising the tuples of the second relation matching the selection criterion (Col. 17, lines 52 – 55, cost – based pruning, Agrawal), and comparing said expense to computational savings that result from the join reduction (Col. 18, lines 29 – 32 and 36 – 42, Agrawal).

Regarding Claims 6, and 14, Agrawal discloses an apparatus wherein, upon identifying a beneficial look-ahead predicate (Col. 17, lines 22 – 26, Agrawal), processing the query by forming and utilizing the look-ahead predicate as a selection criterion on the second relations (Col. 17, lines 27 – 28, Agrawal).

Regarding Claims 7, and 15, Agrawal discloses an apparatus wherein said processor identifies the most beneficial look-ahead predicate among all potential joins of relations in said query, through iterative analysis of all possible joins (Fig. 5, Col. 15, lines 3 – 7, Agrawal).

⁵ Wherein obtaining an estimate of the view size from the query optimizer corresponds to assessing the potential benefit as claimed.

Regarding Claim 8, and 16, Agrawal discloses an apparatus wherein said processor iteratively analyzes all possible joins of the remaining relations (Col. 15, lines 41 – 43, by recursively getting the parents, Agrawal) and the look-ahead predicate to locate further beneficial look-ahead predicates (Col. 15, lines 51 – 54 and 58 – 59, estimate the number of rows ... from the query optimizer, Agrawal).

Regarding Claim 17, Agrawal discloses a program product comprising:
a relational database comprising one or more relations, each relation comprising one or more tuples on one or more attributes (Col. 7, lines 3 – 10, a database, Agrawal),
and

relational database system adapted to perform a query on said relational database by evaluating join predicates in said query to determine whether a join involving a first relation and a second relation will be reductive of said first relation (Fig. 6, item 601, 602, and 603, Col. 15, lines 26 – 30 and 43 – 46; respectively, Agrawal⁶), identifying a join involving said first and second relations that will be reductive of said first relation (Col. 15, lines 29 – 31, V12, Agrawal), and perform said query by the prior application of a look-ahead predicate based upon the second relation in the join (Fig. 6, item 603, and 601, Col. 15, lines 51 – 55 and 58 – 59, Agrawal⁷), and

signal bearing media bearing the relational database and the relational database system (Col. 6, lines 10 – 15, Agrawal).

⁶ Wherein V1 and V2 correspond to the first relation and second relation claimed; and wherein the step of eliminating corresponds to the step of reducing as claimed.

⁷ Wherein the step of estimating the number of rows through the optimizer corresponds to the step of using a look-ahead predicate as claimed.

Regarding Claim 18, Agrawal discloses a program product wherein the signal bearing media comprises transmission media (Col. 6, lines 10 – 15, Agrawal).

Regarding Claim 19, Agrawal discloses a program product wherein the signal bearing media comprises recordable media (Col. 5, lines 24 – 30, Agrawal).

Response to Arguments

1. Regarding claims 1 – 19 rejected under 35 U.S.C. 112, second paragraph, applicant has failed to make the appropriate correction. Therefore, the rejection is maintained and finalized.

2. Applicant argues that the prior art fails to disclose; “evaluating a join to determine whether it is selective of a relation, and in response “performing a query by the prior application of look-ahead predicate based upon the second relation in the join” ”.

Examiner respectfully disagrees. In response to applicant’s argument that the references fail to show certain features of applicant’s invention, it is noted that the features upon which applicant relies (i.e., “evaluating...**whether it is selective of a relation, and in response.**”) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

The applied prior art does disclose performing a query by the prior application of look-ahead predicate based upon the second relation in the join (Fig. 6, item 603, and 601, Col. 15, lines 51 – 55 and 58 – 59, Agrawal). Wherein the step of estimating the number of rows through the optimizer corresponds to the step of using a look-ahead predicate as claimed. Additionally, the applied prior art discloses more details regarding such limitation (Col. 16, lines 57 – 62, “ ... as are selection conditions that appear in the

second by not in the first ...", Agrawal), and the look-ahead predicate (Col. 16, lines 49 – 52, " the algorithm for SPJ (select projection join) views with grouping and aggregation, where the selection conditions are conjunctions of simple predicates"; Agrawal).

3. Applicant argues that the prior art fails to disclose; "a query processing step".

Examiner respectfully disagrees. The applied art Agrawal discloses a query processing step (Col. 21, lines 31 – 36, "to answer queries in the workload", Agrawal).

4. Applicant argues that the prior art fails to disclose; "the use of a look-ahead predicate or the determination of when one should be used".

Examiner respectfully disagrees. The applied art does disclose the use of a look-ahead predicate (See response to Argument 1 in this Office Action above) or the determination of when one should be used. Additionally, in response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., "the determination of when one should be used") are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Conclusion

1. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

2. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Prior Art Made Of Record

1. Agrawal et al. (US Patent No. 6,513,029 B1, filed: August 1, 2000) discloses an interesting table-subset selection for database workload materialized view selection.
2. Pham et al. (US Patent No. 6,757,677 B2) discloses providing a join plan using group-by operator.
3. Non – Patent Literature: “Using Join Operators As Reducers In a Distributed query Processing”, Ming – Syan Chen and Philip S. Yu, IBM Thomas J. Watson Research Center, 1990 IEEE.


Point Of Contact

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Giovanna Colan whose telephone number is (571) 272-2752. The examiner can normally be reached on 8:30 am - 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Breene can be reached on (571) 272-4107. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Giovanna Colan
Examiner
Art Unit 2162
January 9, 2007


Sana AL-Hashemi